PATENT ABSTRACTS OF JAPAN

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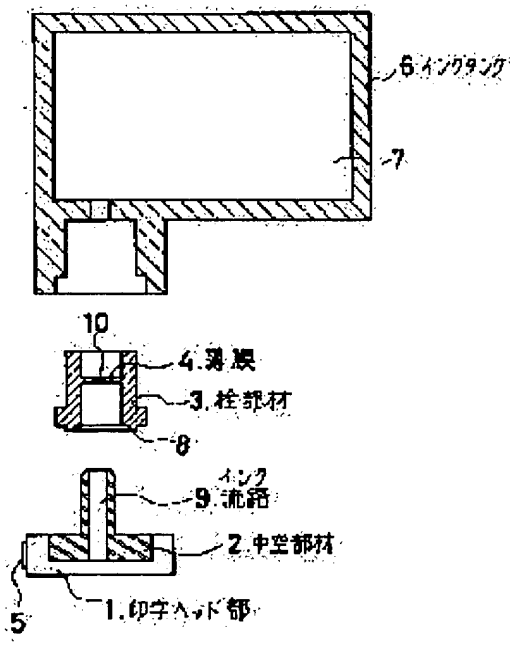
(54) INK SUPPLY DEVICE



(57)Abstract:

PURPOSE: To obtain an ink supply device easily mounted at the time of the replacement of an ink tank by providing the hollow member having an ink passage provided on the bonding surface side of the ink tank of a painting head part and the plug member made of an elastic material provided on the bonding surface side with the ink tank and receiving the hollow member.

CONSTITUTION: An ink supply device for connecting an ink tank 6 to a printing head part 1 has a plug member 3 made of a rubber material having a membrane 4 formed to the interior thereof and having an ink hole 10 having a small diameter provided to the center part of the membrane 4. This plug member 3 has circumferencial porojection 8 provided thereto on the bonding surface side with the printing head part 1 and the projection 8 is crushed at the time of the mounting of the ink tank on the printing head part 1 to obtain an airtight state. A hollow member 2 having an ink passage 9 is provided to the printing head part 1 and functions as a positioning guide at the time of the connection to the ink tank 6 and breaks through the membrane 4 to allow the ink passage 9 to communicatie with the ink tank 6.

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CLAIMS

[Claim(s)]
[Claim 1] The ink feeder characterized by having the plug part material which consists of elastic material which prepares in the plane-of-union side of the centrum material which has the ink passage established in the plane-of-union side of an ink tank, the ink tank which has the ink hold section, and an ink tank, and is prepared in centrum material and a corresponding location.
[Claim 2] The ink feeder characterized by to have the plug part material which becomes the location which prepares in the plane-of-union side of the centrum material which has the ink passage established in the plane-of-union side of an ink tank, the ink tank which has the ink hold section, and an ink tank, and corresponds with centrum material from the elastic material in which the hole smaller than the bore diameter of the centrum material which constitutes ink passage for a thin film in the thin film core of owner Perilla frutescens (L.) Britton var. crispa (Thunb.) Decne. inside has opened.
[Claim 3] The centrum material which constitutes ink passage from a plane of union of an ink head is claim 1 characterized by serving both as the alignment guide and ink passage at the time of association, or an ink feeder given in 2.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the ink feeder suitable for an ink jet printer about the configuration of an ink feeder.
[0002]
[Description of the Prior Art] It arranges in the location which detached the ink tank which supplies ink to the head which carries out the regurgitation of the ink to a record medium as a conventional ink jet printer, and its head, and there are some which combine even a head with an ink supply pipe.
[0003] However, in the ink jet printer of a configuration so that ink may be combined with a supply pipe, since a long supply pipe is generally needed, that it is hard to do piping of a supply pipe, evaporation of ink, and mixing of air arise, and there is a problem that a quality of printed character worsens.
[0004]
[Problem(s) to be Solved by the Invention] On the other hand, there is an ink jet printer of a configuration of having unified the head and the ink tank. Thus, when a head and an ink tank are

unified, troubles, such as ink evaporation, an aeration, and a supply pipe of long piping, can be eliminated, and there is an advantage that handling becomes easy.
[0005] however, when the head and the ink tank were unified and ink supply Gennai's ink is lost, an expensive head is also exchanged for coincidence compared with an ink feed zone -- if it can kick, it will not become. For this reason, there is a problem in cost.
[0006] On the other hand, the ink feeder of a publication is, for example in a publication of unexamined utility model application Showa 63-176635 official report. The configuration which can divide a head and an ink source of supply is indicated by this official report. The configuration which changed the head and ink source of supply of an ink feeder given [this] in an official report into the separation condition is explained using drawing 4 .
[0007] As shown in drawing 4 , the needlelike centrum material 15 which constitutes ink passage is formed in the plane-of-union side of the ink head 14, and the plug part material 11 which consists of elastic material is provided in the needlelike centrum material 15 and a corresponding location at the plane of union of the ink source of supply 16 in which ink is held.
[0008] The needlelike centrum material 15 penetrates the plug part material 11 at the time of association with the ink head 14 and the ink source of supply 16. Ink passage is formed, ink passes along the inside of the needlelike centrum material 15 by this from the ink hold section 12 of the ink source of supply 10, and ink is supplied to the ink reservoir 13 of the ink head 14.
[0009] With the structure shown in this drawing 4 , when the ink of the ink source of supply 10 is lost, only the ink source of supply 16 can be exchanged and it becomes an advantage in cost. However, the guide for alignment or immobilization is needed in the case of connection of the ink head 14, and there is a trouble that structure becomes complicated.
[0010] Furthermore, ink passage is made into the needlelike centrum material 15, if dust is attached to the lateral portion and point of the needlelike centrum material 15 which penetrate the plug part material 11 further, dust will enter in the ink source of supply 16, and the blinding of the ink head 14 will occur.
[0011] Then, the purpose of this invention is offering the ink feeder for ink jet printers which enables ink passage to solve the above-mentioned trouble, to be able to equip easily at the time of exchange of an ink tank, and to secure certainly.
[0012]
[Means for Solving the Problem] In order to attain the above-mentioned purpose, the configuration of the following publication is used for the ink feeder for the ink jet printers of this invention.
[0013] The ink feeder of this invention is characterized by having the plug part material which becomes centrum material and a corresponding location from elastic material at the plane-of-union side of the centrum material which has ink passage in a plane-of-union side with an ink tank, the ink tank which has the ink hold section, and an ink tank.
[0014]
[Function] The centrum material which has ink passage and the ink passage which served as the guide at the time of wearing is prepared in a plane-of-union side with an ink tank, and the plug part material which consists of elastic material is further prepared in centrum material and a corresponding location at the plane-of-union side of an ink tank.
[0015] For this reason, centrum material pushes and lengthens the thin film in plug part material at the time of association, and the passage which leads to the print head section from the ink hold section of an ink tank is formed.
[0016] Consequently, connection of an ink tank is easy and there is no mixing of ink leakage or

dust at the time of wearing, and when it moreover equips, it becomes possible to offer the ink feeder which can secure ink passage certainly.
[0017]
[Example] The configuration of the ink feeder in the example of this invention is explained using a drawing below. Drawing 1 is the sectional view showing the condition of having decomposed the ink feeder and head in an example of this invention.
[0018] As shown in drawing 1 , an ink feeder consists of an ink tank 6, plug part material 3, and centrum material 2.
[0019] It consisted of a rubber ingredient, thickness formed the thin thin film 4 in the interior, and the plug part material 3 has established the ink hole 10 of a dimension smaller than the bore diameter of the ink passage 9 of the centrum material 2 in the core of a thin film 4.
[0020] Furthermore, the plug part material 3 forms the periphery-like projection 8 in a plane-of-union side with the print head section 1. And when equipping the print head section 1, projection 8 is crushed and the print head section 1 and the ink tank 6 are changed into an airtight condition. Consequently, mixing of air can be prevented now at the time of association with the ink tank 6 and the print head section 1.
[0021] The centrum material 2 becomes a positioning guide and the ink passage 9 for supplying ink to the print head section 1, when connecting with the ink tank 6 formed in the print head section 1 side.
[0022] The print head section 1 consists of an ink delivery 5 and centrum material 2. And it has composition whose attachment and detachment become free as for the ink tank 6 and the plug part material 3 from the print head section 1.
[0023] Drawing 2 is the sectional view showing the condition of having inserted the plug part material 3 in the plane-of-union side of the ink tank 6, and having equipped with the print head section 1 further.
[0024] As shown in drawing 2 , the plug part material 3 which consists of a rubber ingredient is formed in the centrum material 2 prepared in the print head section 1, and a corresponding location.
[0025] And when the centrum material 2 lengthens the thin film 4 in the plug part material 3 and expands the ink hole 10 greatly, the ink passage which can perform ink supply in the print head section 1 smoothly from the ink hold section 7 is formed.
[0026] When equipping the print head section 1 with the ink tank 6, the centrum material 2 serves also as work of an alignment guide further again.
[0027] Drawing 3 is the sectional view showing the condition of having separated the print head section 1. As shown in drawing 3 , when exchanging the ink tank 6, an ink feeder can be exchanged by making it secede in the direction which the arrow head 17 in drawing 3 shows from the ink tank 6.
[0028] In the condition of having seceded from the ink tank 6, as that by which the thin film 4 was lengthened by the centrum material 2 shows the ink hole 10 of the thin film 4 in the plug part material 3 to drawing 3 , it returns to the original small hole by ******.
[0029] For this reason, it can prevent it being absorbed in the ink hold section 7 by the capillary tube force in the ink tank 6, and ink leakage occurring, and soiling a perimeter, without the ink which remained between the thin film 4 in the plug part material 3 and the ink tank 6 at the time of ink tank 6 balking leaking outside.
[0030]
[Effect of the Invention] Like the above explanation, this invention is the centrum material which

constitutes ink passage in the print head section, and forms the passage which pushes and lengthens the thin film in the plug part material inserted in the ink tank by centrum material, and leads to the print head section from the ink hold section of an ink tank.
[0031] Therefore, centrum material is applicable also to the guide at the time of association, connection with an ink tank is easy for it, moreover it does not have mixing of ink leakage or dust, and can secure ink passage certainly.

TECHNICAL FIELD

[Industrial Application] This invention relates to the ink feeder suitable for an ink jet printer about the configuration of an ink feeder.

PRIOR ART

[Description of the Prior Art] It arranges in the location which detached the ink tank which supplies ink to the head which carries out the regurgitation of the ink to a record medium as a conventional ink jet printer, and its head, and there are some which combine even a head with an ink supply pipe.
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EFFECT OF THE INVENTION

[Effect of the Invention] Like the above explanation, this invention is the centrum material which constitutes ink passage in the print head section, and forms the passage which pushes and lengthens the thin film in the plug part material inserted in the ink tank by centrum material, and leads to the print head section from the ink hold section of an ink tank.
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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] On the other hand, there is an ink jet printer of a configuration of having unified the head and the ink tank. Thus, when a head and an ink tank are unified, troubles, such as ink evaporation, an aeration, and a supply pipe of long piping, can be eliminated, and there is an advantage that handling becomes easy.
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MEANS

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OPERATION

[Function] The centrum material which has ink passage and the ink passage which served as the guide at the time of wearing is prepared in a plane-of-union side with an ink tank, and the plug part material which consists of elastic material is further prepared in centrum material and a corresponding location at the plane-of-union side of an ink tank.

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EXAMPLE

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[0029] For this reason, it can prevent it being absorbed in the ink hold section 7 by the capillary tube force in the ink tank 6, and ink leakage occurring, and soiling a perimeter, without the ink which remained between the thin film 4 in the plug part material 3 and the ink tank 6 at the time of ink tank 6 balking leaking outside.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the sectional view showing the whole separation condition block diagram of the ink feeder in the example of this invention.
[Drawing 2] The ink feeder in the example of this invention is the sectional view showing the condition of having combined with the print head.
[Drawing 3] The ink feeder in the example of this invention is the sectional view showing the condition of having seceded from the print head.
[Drawing 4] It is the sectional view showing the configuration of the ink feeder in the conventional example.
[Description of Notations]
1 Print Head Section
2 Centrum Material
3 Plug Part Material
4 Thin Film
5 Ink Delivery
6 Ink Tank
7 Ink Hold Section
8 Projection
9 Ink Passage
10 Ink Hole

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			Ｂ４１Ｊ　3/04　１０２　Ｚ	

審査請求　未請求　請求項の数３　ＯＬ　（全４頁）

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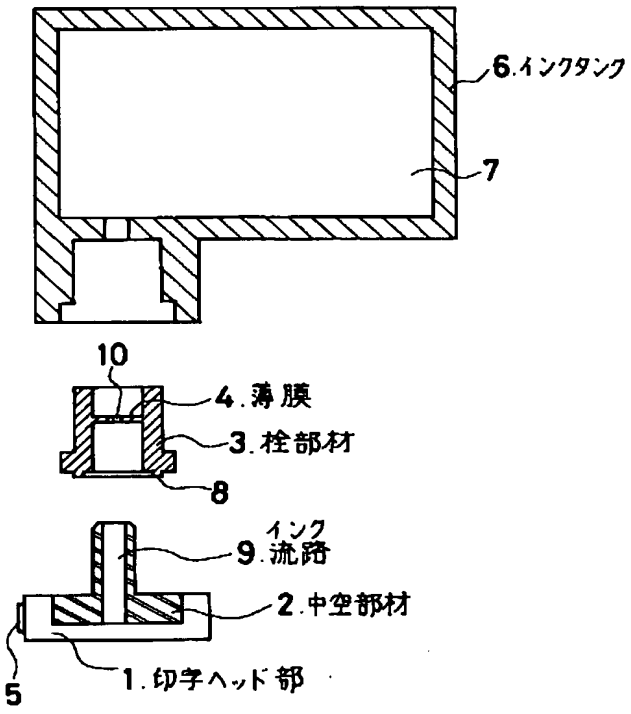
(54)【発明の名称】　インク供給装置

(57)【要約】
【構成】　インクヘッドの結合面側にインク流路を構成する中空部材２と、インクを収容するインクタンク６と、インクタンクの結合面側には中空部材と対応する位置に弾性材よりなる栓部材３とを有する。
【効果】　印字ヘッド部にインク流路を構成する中空部材で、インクタンクに挿入されている栓部材内の薄膜を中空部材で押しのばしてインクタンクのインク収容部から印字ヘッド部へ通じる流路を形成する。中空部材は結合時のガイドにも利用できインクタンクとの接続が容易で、インク漏れやゴミの混入がなく確実にインク流路を確保することができる。



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【特許請求の範囲】

【請求項１】　インクタンクの結合面側に設けるインク流路を有する中空部材と、インク収容部を有するインクタンクと、インクタンクとの結合面側に設け中空部材と対応する位置に設ける弾性材からなる栓部材とを有することを特徴とするインク供給装置。

【請求項２】　インクタンクの結合面側に設けるインク流路を有する中空部材と、インク収容部を有するインクタンクと、インクタンクとの結合面側に設け中空部材と対応する位置に、内部に薄膜を有しその薄膜中心部にはインク流路を構成する中空部材の穴径より小さい穴があいている弾性材からなる栓部材とを有することを特徴とするインク供給装置。

【請求項３】　インクヘッドの結合面でインク流路を構成する中空部材は、結合時の位置合わせガイドとインク流路とをかねていることを特徴とする請求項１、あるいは２に記載のインク供給装置。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は、インク供給装置の構成に関し、インクジェットプリンタに適したインク供給装置に関する。

【０００２】

【従来の技術】従来のインクジェットプリンタとしては、記録媒体に対してインクを吐出するヘッドと、そのヘッドにインクを供給するインクタンクを離した位置に配置し、ヘッドまでをインク供給管で結合するものがある。

【０００３】しかしながら、インクを供給管で結合するような構成のインクジェットプリンタにおいては、一般に長い供給管を必要とするので、供給管の配管がやりにくいことや、インクの蒸発や空気の混入が生じ、印字品質が悪くなるという問題がある。

【０００４】

【発明が解決しようとする課題】これに対して、ヘッドとインクタンクとを一体化した構成のインクジェットプリンタがある。このようにヘッドとインクタンクとを一体化すると、インク蒸発や、空気混入や、長い配管の供給管といった問題点を排除でき、取扱いが容易になるという利点がある。

【０００５】しかしながら、ヘッドとインクタンクとを一体化すると、インク供給源内のインクがなくなった場合、インク供給部に比べて高価であるヘッドも同時に交換しなければならない。このため、コスト的に問題がある。

【０００６】これに対して、たとえば実開昭６３－１７６６３５公報に記載のインク供給装置がある。この公報にはヘッドとインク供給源とを分割することができる構成が記載されている。この公報記載のインク供給装置のヘッドとインク供給源を分離状態にした構成を、図４を

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用いて説明する。

【０００７】図４に示すように、インクヘッド１４の結合面側にはインク流路を構成する針状中空部材１５を設け、インクが収容されているインク供給源１６の結合面には針状中空部材１５と対応する位置に弾性材よりなる栓部材１１を設けてある。

【０００８】インクヘッド１４とインク供給源１６との結合時に針状中空部材１５は、栓部材１１を貫通する。このことで、インク流路を形成し、インク供給源１０のインク収容部１２からインクが針状中空部材１５内を通り、インクヘッド１４のインク溜部１３へインクを供給する。

【０００９】この図４に示す構造では、インク供給源１０のインクがなくなった場合、インク供給源１６のみを交換でき、コスト的に利点とはなる。しかし、インクヘッド１４を接続の際に、位置合わせや固定のためのガイドが必要となり、構造が複雑になるという問題点がある。

【００１０】またさらに、インク流路は針状中空部材１５としており、さらに栓部材１１を貫通する針状中空部材１５の側面部や先端部にゴミがついていると、インク供給源１６内にゴミが入ってしまいインクヘッド１４の目詰まりが発生する。

【００１１】そこで、本発明の目的は、上記問題点を解決し、インクタンクの交換時に容易に装着でき、インク流路が確実に確保することを可能とするインクジェットプリンタ用のインク供給装置を提供することである。

【００１２】

【課題を解決するための手段】上記目的を達成するために本発明のインクジェットプリンタ用のインク供給装置は、下記記載の構成を採用する。

【００１３】本発明のインク供給装置は、インクタンクとの結合面側にインク流路を有する中空部材と、インク収容部を有するインクタンクと、インクタンクとの結合面側には中空部材と対応する位置に弾性材よりなる栓部材とを有することを特徴とする。

【００１４】

【作用】インクタンクとの結合面側にインク流路と装着時のガイドをかねたインク流路を有する中空部材を設け、さらにインクタンクの結合面側には中空部材と対応する位置に弾性材よりなる栓部材を設ける。

【００１５】このため結合時に中空部材は、栓部材内の薄膜を押しのばして、インクタンクのインク収容部から印字ヘッド部へ通じる流路を形成する。

【００１６】この結果、インクタンクの接続が容易で、かつ装着時にインク漏れやゴミの混入がなく、しかも装着したときには確実にインク流路を確保することができるインク供給装置を提供することが可能となる。

【００１７】

【実施例】以下図面を用いて本発明の実施例におけるイ

ンク供給装置の構成を説明する。図１は本発明の実施例におけるインク供給装置とヘッドとを分解した状態を示す断面図である。

【００１８】図１に示すように、インク供給装置は、インクタンク６と栓部材３と中空部材２から構成する。

【００１９】栓部材３はゴム材料よりなり、内部には厚さが薄い薄膜４を形成し、薄膜４の中心部には中空部材２のインク流路９の穴径よりも小さい寸法のインク穴１０を設けている。

【００２０】さらに栓部材３は、印字ヘッド部１との結合面側に円周状の突起８を設ける。そして、印字ヘッド部１に装着するときは、突起８が押し潰され印字ヘッド部１とインクタンク６とを気密状態にする。この結果、インクタンク６と印字ヘッド部１との結合時に、空気の混入を防ぐことができるようになっている。

【００２１】中空部材２は、印字ヘッド部１側に設けるインクタンク６と接続するときに、位置決めガイドと、印字ヘッド部１へインクを供給するためのインク流路９とになる。

【００２２】印字ヘッド部１は、インク吐出口５と中空部材２とで構成する。そして、印字ヘッド部１からインクタンク６と栓部材３とは着脱自在になるような構成となっている。

【００２３】図２はインクタンク６の結合面側に栓部材３を挿入し、さらに印字ヘッド部１を装着した状態を示す断面図である。

【００２４】図２に示すように、印字ヘッド部１に設ける中空部材２と対応する位置に、ゴム材料よりなる栓部材３を設ける。

【００２５】そして、中空部材２が栓部材３内の薄膜４を伸ばし、インク穴１０を大きく拡大することにより、インク収容部７から印字ヘッド部１にインク供給をスムーズに行うことができるインク流路を形成する。

【００２６】さらにまた、インクタンク６を印字ヘッド部１に装着するとき、中空部材２は位置合わせガイドの働きもかねている。

【００２７】図３は印字ヘッド部１を分離した状態を示す断面図である。図３に示すようにインクタンク６を交換するときは、図３中の矢印１７が示す方向にインクタンク６を離脱させることにより、インク供給装置の交換

を行うことができる。

【００２８】インクタンク６を離脱した状態では、栓部材３内の薄膜４のインク穴１０は、薄膜４が中空部材２により伸ばされていたものが、図３に示すように、ちじんで元の小さい穴に戻る。

【００２９】このために、インクタンク６離脱時に栓部材３内の薄膜４とインクタンク６の間に残ったインクは外部に漏れることなく、インクタンク６内の毛細管力でインク収容部７内に吸収され、インク漏れが発生して周囲を汚すことを防止できる。

【００３０】

【発明の効果】以上の説明のように、本発明は印字ヘッド部にインク流路を構成する中空部材で、インクタンクに挿入されている栓部材内の薄膜を中空部材で押しのばしてインクタンクのインク収容部から印字ヘッド部へ通じる流路を形成する。

【００３１】したがって、中空部材は結合時のガイドにも利用でき、インクタンクとの接続が容易で、しかもインク漏れやゴミの混入がなく、確実にインク流路を確保することができる。

【図面の簡単な説明】

【図１】本発明の実施例におけるインク供給装置の分離状態の全体構成図を示す断面図である。

【図２】本発明の実施例におけるインク供給装置が印字ヘッドと結合した状態を示す断面図である。

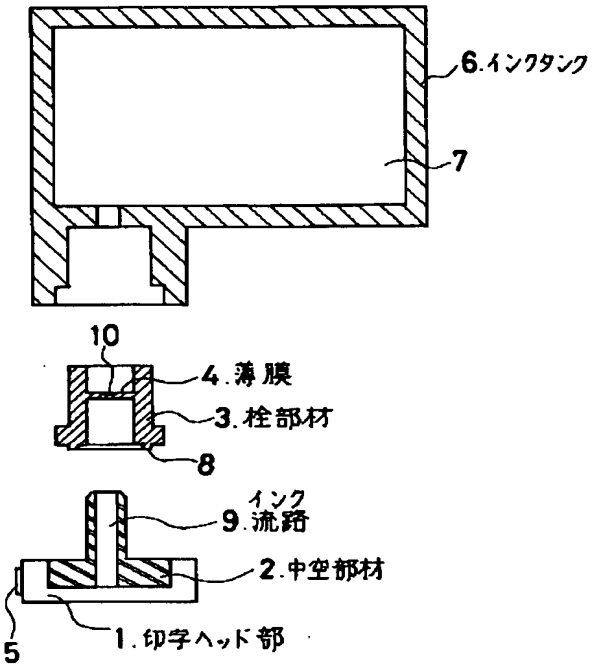
【図３】本発明の実施例におけるインク供給装置が印字ヘッドから離脱した状態を示す断面図である。

【図４】従来例におけるインク供給装置の構成を示す断面図である。

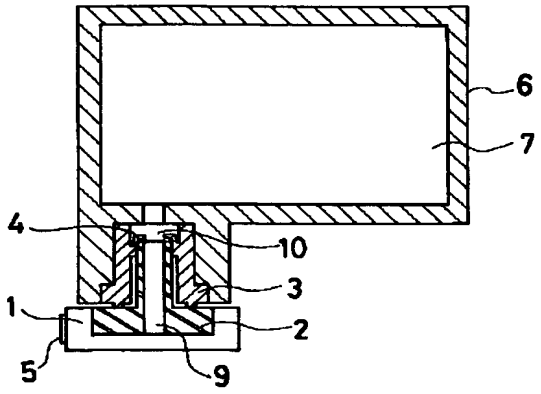
【符号の説明】

１　印字ヘッド部
２　中空部材
３　栓部材
４　薄膜
５　インク吐出口
６　インクタンク
７　インク収容部
８　突起
９　インク流路
１０　インク穴

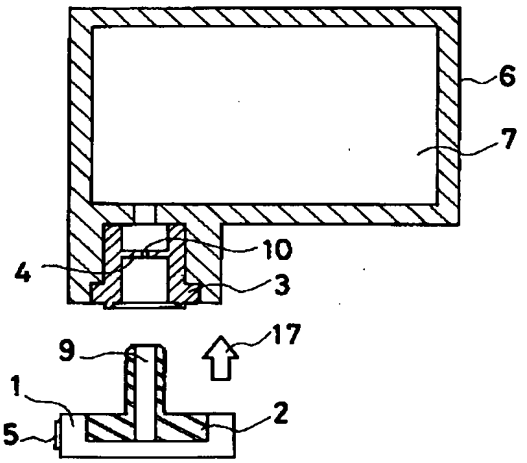
【図１】


6.インクタンク
7
10
4.薄膜
3.栓部材
8
インク
9.流路
2.中空部材
5
1.印字ヘッド部

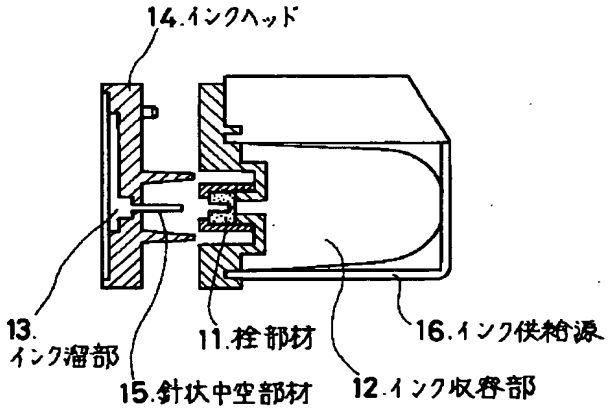
【図２】


6
7
4
10
3
1
2
5
9

【図３】


6
7
10
4
3
9
17
1
2
5

【図４】


14.インクヘッド
13.
インク溜部
11.栓部材
16.インク供給源
15.針状中空部材
12.インク収容部